

*Research Article***Detection of Hepatitis C infection among frequently transfused children in El-Minia Governorate–Egypt**

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**Abstract**

**Introduction:** Hepatitis is a general term meaning inflammation of the liver and can be caused by several mechanisms, including infectious agents. Viral hepatitis can be caused by a variety of different viruses such as hepatitis A, B, C, D and E. In 1989 the virus responsible for most transfusion-associated non-A non-B hepatitis was identified and cloned, and named hepatitis C virus (HCV). (Sangita Shah et al., 2013). **Aim of the work:** The aim of this study is to determine the frequency of Hepatitis C among frequently transfused children in EL-Minia governorate- Egypt through out multi-center study. **Subjects and Methods:** A cross sectional study was conducted at hematology Clinic of EL-Minia University Hospital, Hematology clinic of EL-Minia insurance Hospital, and Regional Blood Transfusion Center in El-Minia in a period from March to June 2015. **Results:** Out of 200 patients there were 77 (38.5%) confirmed positive for anti- HCV- antibodies. The remaining 123(61.5%) were seronegative. The result was significantly high ( $P = 0.001$ ). **Discussion:** Hepatitis C virus (HCV) is a blood borne virus. Most epidemiological studies have focused on group at risk of infection such as thalassemia, and G6PD patients through multiple blood transfusions. **Conclusion:** Transfusion-dependent patients are more prone to acquiring various transfusion-transmitted infections such as Hepatitis C Virus (HCV). Thalassemia patients are at more risk for blood born infection such as HCV due to frequent blood transfusion. The older the patient, the frequent the blood transfusion, the higher the incidence of HCV infection.

**Kay Words:**

<b>bdNA</b>	<b>branched-DNA</b>
<b>BSE</b>	<b>Bovine spongiform encephalopathy</b>
<b>CBC</b>	<b>Complete blood count</b>

**Introduction**

Hepatitis is a general term meaning inflammation of the liver and can be caused by several mechanisms, including infectious agents. Viral hepatitis can be caused by a variety of different viruses such as hepatitis A, B, C, D and E. In 1989 the virus responsible for most transfusion-associated non-A non-B hepatitis was identified and cloned, and named hepatitis C virus (HCV). (Sangita Shah et al., 2013)

Viral hepatitis is a serious global public health problem. Hepatitis B virus (HBV), Hepatitis C virus (HCV), and Hepatitis D virus (HDV) are blood borne viruses transmitted through a breach in the skin or

mucosa in intravenous drug users, through blood transfusions, hemodialysis, needle-stick injuries, tattooing, sexual intercourse and peri-natal infections (Chattopadhyay et al., 2014) . In HCV, the risk of sexual transmission is from 0% to 0.6% per year for persons in monogamous relationships. Nonsexual infection of household members (siblings, offspring, and parents) is also possible but has low probability. In developing countries, use of reused needles and syringes for therapeutic injections and improper sterilization of invasive medical devices is the major vehicle for transmission of blood borne organisms including hepatitis B virus (HBV), HCV and HIV(Human immunodeficiency virus).

The first demonstration that most cases of transfusion-associated hepatitis were caused by neither hepatitis A virus (HAV) nor hepatitis B virus (HBV), the presumed etiologic agent, non-A non-B hepatitis virus. Hepatitis C is also called type C hepatitis, Parenterally transmitted non-A non-B hepatitis (PT-NANB), NonB transfusion-associated hepatitis, Posttransfusion non-A, non-B hepatitis. (Chattopadhyay et al., 2014).

HCV infection has become an important complication in multiply transfused patients. Hepatitis C is transmitted only by blood and blood products, so it is very important to study its prevalence in blood donors. Recently, prevalence of infection has increased. This is alarming as Hepatitis C infection progresses to chronicity and it is not a vaccine preventable disease. (Sangita Shah et al., 2013).

The increase in seropositivity increases with the number of transfusions and has led to high morbidity in Thalassemia patients. Transfusion-dependent patients are more prone to acquiring various transfusion-transmitted infections such as Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), Human Immune Deficiency Virus (HIV), syphilis and many more. Most of those who are HCV positive have a history of parenteral risk such as a history of transfusion or administration of blood products or of intravenous drug abuse . There is little evidence for sexual or perinatal transmission of HCV and the natural routes of transmission are yet to be identified .

### **Aim of the work**

The aim of this study is to determine the frequency of Hepatitis C among frequently transfused children in EL-Minia govern-orate Egypt through out multi-center study.

### **Subjects and Methods**

A cross sectional study was conducted at hematology Clinic of EL-Minia University Hospital, Hematology clinic of EL-Minia insurance Hospital, and Regional Blood

Transfusion Center in EL-Minia in a period from March to June 2015.

A total of 200 children (167 male- 33 female) receiving regular blood transfusion were taken randomly. They were registered for transfusion management.

Inclusion Criteria: Known cases that had been transfused, as a part of their management, at least ten units of blood, irrespective of their age, sex .

### **Exclusion Criteria:**

Patients who had been transfused less than 10 units of blood as a part of their management were not included in this study.

### **All patients of the study were subjected to:**

1. Complete history.
2. physical examination.

Clinical History:

Personal History:

Age:

Sex

age at diagnosis

Residence.

A. Present History:

frequency of transfusion; flu like symptoms.

weight loss, Fever, Hepatobiliary symptoms: history of jaundice.

Bleeding tendency (bleeding from orifices, prolonged bleeding from puncture sites, hematoma following IM injection).

Itching.

Right hypochondrial pain.

Liver cell failure (fatigue, weakness, behavioral changes, disturbed consciousness).

Lower limb swelling.

Abdominal distention.

Steatorrhea.

Hematological symptoms:

Manifestation of anemia:

Pallor

Hemolysis (color of urine, jaundice).

Easy fatigue.

Lack of concentration.

Effort intolerance.

Thrombocytopenia:

Spontaneous bleeding.

Bleeding orifices (epistaxis, hematemesis, melena, bleedind per rectum).

**Results**

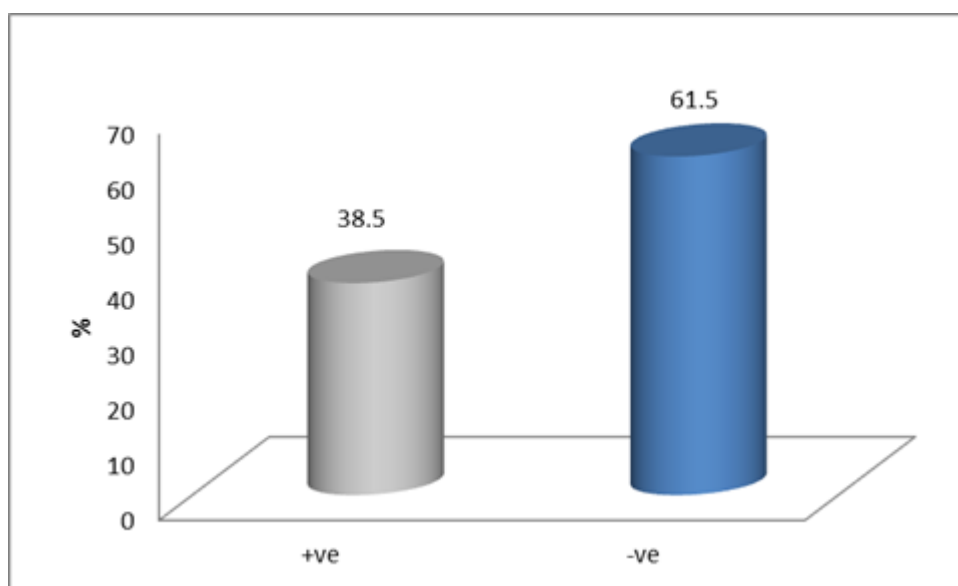
**Table (1): Frequency of HCV for all studied children )**

HCV	Frequency	Percent	X <sup>2</sup>	P-value
+ve	77	38.5%	10.58	0.001*
-ve	123	61.5%		
<b>Total</b>	<b>200</b>	<b>100%</b>		

\* Significant:

**Table (1):**

Out of 200 patients there were 77 (38.5 %) confirmed positive for anti- HCV- antibodies. The remaining 123(61.5%) were seronegative. The result was significantly high (P = 0.001).



**( Fig. (1): Percentage of HCV for all studied children )**

**Discussion**

Hepatitis C virus (HCV) is a blood borne virus. Most epidemiological studies have focused on group at risk of infection such as thalassemia, and G6PD patients through multiple blood transfusions. However, HCV is now considered as the leading

cause of post transfusion hepatitis worldwide (Ataei, et al., 2012 ).The risk acquiring HCV infection as a result of transfusion was about 10%. It was found that the HCV is responsible for at least 90% of transfusion associated NANB (Non A Non B) hepatitis. (Baydaa et al., 2010).

Repeated blood transfusion in these patients is necessary for their survival; however, such transfusions increase the exposure not only to HCV but also other blood borne

viruses (Hepatitis B virus (HBV), Hepatitis G virus (HGV), Human Immunodeficiency virus (HIV). It was stated that the second commonest cause of death in thalassemic major patients over 15 years of age is liver disease, due to blood borne viral hepatitis (Ataei, et al., 2012). Interestingly, more studies addressed that patients, on long-term transfusion therapy, were at risk of experiencing HCV in a prevalence ranging from (4%-85%) (Mansour et al., 2011 ).

In the present study we found that the frequency of anti HCV antibody positive cases were at alarming high levels of (38.5% )of all multi-transfused children; out of 200 patients there was 77 (38.5 %) was confirmed positive for anti-HCV- antibodies, the other 123 (61.5 %) were seronegative (Table 1).

HCV infection is a major health problem in Egypt. Both adults and children are affected by this disease. The magnitude of HCV infection in children has been studied by many authors (Amer et al., 2015).

Most recent studies in Egypt from 2000 to 2014 showed the magnitude of the problem as following:

Lower Egypt: (9%) (Habib et al., 2001), Upper Egypt: (3%) (Medhat et al., 2002), Hospital-based: (1.4%) (El-Raziky et al., 2007), Assuit University: (26%) (Kalil et al., 2010), Alexandria: (5.8%) (Barakat et al., 2011), and Assuit: 18(12%) (Farghaly et al., 2014).

### Conclusion

Transfusion-dependent patients are more prone to acquiring various transfusion-transmitted infections such as Hepatitis C Virus (HCV).

Thalassemia patients are at more risk for blood born infection such as HCV due to frequent blood transfusion.

The older the patient, the frequent the blood transfusion, the higher the incidence of HCV infection.

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